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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,869	03/13/2001	Dan X. Tang	200-0658	1808

7590

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EXAMINER

SHAAWAT, MUSSA

ART UNIT PAPER NUMBER

2128

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/804,869

**Applicant(s)**

TANG, DAN X.

**Examiner**

Mussa A Shaawat

**Art Unit**

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>31 March 2001</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This action is responsive to application number 09/804,869 filed on March 13, 2001. Claims 1-20 are presented for examination.

#### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Pg.3 paragraph [0030] reference #34. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Fig. 4 reference # 56. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to

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obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singh et al. US Patent No. (6,760,693) referred to hereinafter as Singh in view of Kazuma Shimizu US Patent No. (5,808,616) referred to hereinafter as Shimizu.

4. As to claim 1, Singh teaches a system of section cutting and analysis of a computer model comprising: a computer system (see Fig.1), wherein said computer system includes a memory (see col.4 lines 32-34), a processor (Fig.1 block 124a), a user input device (Fig.1 block 124c) and a display device (Fig.1 block 124b); a computer generated model of a structural member stored in the memory of the computer system (see Fig.3 block 210, col.6 lines 13-25, user obtains a vehicle body structure from vehicle library which is generated by a computer system); the computer system using a computer aided engineering (CAE) analysis to predict a property of the section (see col.7 lines 22-24, CAE analysis is used to determine a structural criteria for the vehicle model); and the user using the input device (Fig.1 block 124c) to modify the section, if the property does not meet a predetermined criterion (see col.7 lines 25-30). Though Singh teaches a method that include various computer-aided design (CAD) tools, which

can be used for the design of a vehicle. Also, the design tools include solid modeling and parametric design techniques (col.3 lines 56-60), he does not expressly teach a user locating at least a first cutting plane and a last cutting plane on the computer model.

Shimizu teaches a user locating at least a first cutting plane and a last cutting plane on the computer model using the user input device, wherein the first and last cutting planes define a cutting path, and the computer model is cut into at least one section along the cutting path (see col.10 lines 26-45, the user designates the amount and direction of cutting a cross section area of a selected structure by using an input device such as; a keyboard or a mouse); said computer system maintaining the section in the memory (see col.10 line 35, designated cross section is stored in memory).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the Singh and the Shimizu to create a method and a system of section cutting analysis of a computer model because it would provide the user with an efficient, flexible, rapid design of the vehicle.

5. As to claim 2., Singh teaches a system as set forth in claim 1 wherein the computer system prompts a user to input a shell thickness if the model is a computer-aided design (CAD) model (see col.3 lines 57-58, and col.4 lines 40-45, user inputs product specific parameters into the computer system when prompted to do so, specific product parameters can include shell thickness).

6. As to claim 3, Singh teaches a method as set forth in claim 1 wherein the computer system prompts a user to input a material type if the model is a computer-aided design (CAD) model (see col.3 lines 57-58, and col.4 lines 40-45, user inputs product specific parameters into

the computer system when prompted to do so, specific product parameters can include material type of structure).

7. As to claim 4, Singh teaches a method of solid modeling that takes electronically stored vehicle model data from the vehicle library and standard component parts data from knowledge-based engineering library and builds complex geometry for part-to-part or full assembly analysis using CAD, CAE and FEA tools; however he does not expressly teach a cutting plane.

Shimizu teaches a method of a cutting plane generated by the user selecting two points on the model using the input device and the computer system generates a vertical plane oriented perpendicular to a line between the points (see col.11 lines 60-67 and col.12 lines 1-18, a user selects the cutting direction and cutting amount by using an input device such as a mouse or a keyboard, this include selecting two points on a plane and generating a plane vertical oriented to a perpendicular line which is similar to a 3d shape produced by cutting a cross section taught by Shimizu).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the Singh and the Shimizu to create a method and a system of section cutting analysis of a computer model because it would provide the user with an efficient, flexible, rapid design of the vehicle.

8. As to claim 5, claim 5 includes all the limitations taught by claim 1; therefore it is rejected based on the same rationale, *supra*.

9. As to claim 6, claim 6 includes all the limitations taught by claim 2; therefore it is rejected based on the same rationale, *supra*.

10. As to claim 7, claim 7 includes all the limitations taught by claim 3; therefore it is rejected based on the same rationale, *supra*.

11. As to claim 8, Singh teaches a method to design a vehicle that includes the steps of determining a low-level geometric model of the vehicle and determining a modifiable parameter to modify the vehicle (see abstract); however he does not expressly teach defining an area of the model for locating the cutting path.

Shimizu teaches a method of defining an area of the model for locating the cutting path after said step of selecting a computer model (see col.10 lines 36-46, user designates the cutting cross sectional area by using an input device such as: keyboard and a mouse).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the Singh and the Shimizu to create a method and a system of section cutting analysis of a computer model because it would provide the user with an efficient, flexible, rapid design of the vehicle.

12. As to claim 9, claim 8 includes the limitation of claim 9; therefore claim 9 is rejected based on the same rationale, *supra*.

As to claim 10, claim 4 includes the limitation of claim 10; therefore claim 10 is rejected based on the same rationale, *supra*.

13. As to claim 11, Singh teaches a method to design a vehicle that includes the steps of determining a low-level geometric model of the vehicle and determining a modifiable parameter to modify the vehicle (see abstract); however he does not expressly teach a method of locating a cutting plane that includes the step of selecting a line on a computer.

Shimizu teaches a method of locating a cutting plane includes the step of selecting a line on a computer aided design (CAD) model (col.4 lines 65-67, uses a CAD program) defining the cutting plane (see col.6 lines 26-33, et seq., using a mouse to click and drag a cursor is moved to the target surface locating a cutting plane).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the Singh and the Shimizu to create a method and a system of section cutting analysis of a computer model because it would provide the user with an efficient, flexible, rapid design of the vehicle.

14. As to claim 12, Singh teaches a method as set forth in claim 5 including the step determining if the model is a finite element analysis (FEA) model and simplifying the FEA model by replacing a shell element along the cutting path with a beam element (col.7 lines 21-30, a CAE tool such as Finite element analysis is used to design a vehicle, which allows the user to easily modify or replace parameters in order meet the design of a vehicle which corresponds to replacing a shell element with a beam element).

15. As to claim 13, Singh teaches a method as set forth in claim 5 wherein said step of analyzing the section includes the step of using finite element analysis to determine a geometric property of the section to assess its stiffness (see col.7 lines 19-30, CAE tool such as finite element analysis is used to determine the geometrical property of the structure is satisfied which includes stiffness).

16. As to claim 14, Singh teaches a method as set forth in claim 5 wherein said step of analyzing the section includes the step of using finite element analysis to determine crush



strength of the section (see col.7 lines 19-30, CAE tool such as finite element analysis is used to determine the geometrical property of the structure is satisfied which includes crush strength).

17. As to claim 15, claim 1 includes all the limitations of claim 15; therefore it is rejected based on the same rationale, supra.

18. As to claim 16, claim 2 includes all the limitations of claim 16; therefore it is rejected based on the same rationale, supra.

19. As to claim 17, claim 3 includes all the limitations of claim 17; therefore it is rejected based on the same rationale, supra.

20. As to claim 18, claim 9 includes all the limitations of claim 18; therefore it is rejected based on the same rationale, supra.

21. As to claim 19, claim 11 includes all the limitations of claim 19; therefore it is rejected based on the same rationale, supra.

22. As to claim 20, claim 12 includes all the limitations of claim 20; therefore it is rejected based on the same rationale, supra.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Weber et al. US Patent No. (6,113,643) method and system for vehicle design using occupant vision zones.
- Hall et al. US Patent No. (6,487,525) method for designing a HVAC air handling assembly for a climate control system.
- Shaikh et al. US Patent No. (6,446,697) Rapidly making complex castings.

- Strumolo et al. US Patent No. (6,529,860) practical impact and soil deposition analysis and method for vehicle design.

***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mussa A Shaawat whose telephone number is (703) 605-1372. The examiner can normally be reached on Monday-Friday (8:30am to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean R Homere can be reached on (703) 308-6647. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mussa Shaawat  
Examiner  
September 23, 2004

JEAN R. HOMERE  
PRIMARY EXAMINER